



IN THE UNITED STATES PATENT AND TRADEMARK OFFICE

In re Application of:

Yoshiki SAKUMA

Serial No.: 09/819,762

Group Art Unit: 2815

Filed: March 29, 2001

Examiner: Bradley W. Baumeister

For: HETEROBIPOLAR TRANSISTOR AND A METHOD OF FORMING A SIGEC MIXED CRYSTAL LAYER

AMENDMENT UNDER 37 CFR 1.111

Commissioner for Patents  
Washington, D.C. 20231

August 5, 2002

Sir:

In response to the Office Action mailed May 6, 2002, please amend the application as follows

and reconsider the application in view of the Remarks.

08/09/2002 JMC/MILLA 00000003 012340 09819762

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IN THE SPECIFICATION

Paragraph beginning at line 21 of page 3 has been amended as follows:

A 1  
As represented in the band structure of FIG.1B, the base layer 13 contains Ge with a concentration profile such that the Ge concentration increases from the interface between the base layer 13 and the emitter layer 14 to the interface between the base layer 13 and the collector layer 12, and there occurs a gradient in the conduction band  $E_c$  in the base layer 13 in such a manner that the conduction band  $E_c$  is inclined toward the collector layer 12. By providing such a graded compositional profile in the base layer 13, it becomes possible to accelerate the electrons causing a diffusion in the base layer 13 by applying thereto a drift electric field. Thereby, the operational speed of the heterobipolar 10 is improved. About the heterobipolar transistor using such a SiGe binary

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Amel  
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